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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,451	01/27/2004	Dennis S. Greywall	32	3210

7590

03/20/2006

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EXAMINER

CHANDRAN, BIJU INDIRA

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/766,451	<b>Applicant(s)</b> GREYWALL, DENNIS S.	
	<b>Examiner</b> Biju Chandran	<b>Art Unit</b> 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 and 15 is/are allowed.
- 6) ☒ Claim(s) 10, 11, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/25/05, 5/13/05</u> | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 10, 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carr (US 6,130,464).

- Regarding claim 1, Carr discloses a micro-electrical-mechanical-switch, MEMS, monolithic semiconductor device comprising a semiconductor wafer (110), a first electrically insulating layer (126) formed on the semiconductor wafer, and a second semiconductor layer (120) formed on the first layer (column 4, lines 1-5); a latching movable shuttle switch formed in the second layer and having the first layer removed under the shuttle switch (figure 3C), the shuttle switch being moved in a first direction relative to the wafer in response to a predetermined acceleration of the MEMS device in a direction opposite to the first direction, thereby changing an operating state of the shuttle switch (column 5, lines 40-57). While Carr does not explicitly say that the shuttle switch moves in a direction opposite to the direction of the applied acceleration, it would have been obvious to one of ordinary sense in the art at the time of the invention that the principles of

Newton's laws of motion requires that the shuttle will move in a direction opposite to the applied acceleration.

- Regarding claim 11, Carr further discloses that the shuttle switch includes an electrical switch for providing an electrical switch connection when the MEMS device has undergone the predetermined acceleration (column 6, lines 43-58).
- Regarding claim 13, Carr further discloses an absorbing stop (112) formed in the second layer for limiting the movement of the shuttle switch in the first direction.
- Regarding claim 14, Carr further discloses that the semiconductor wafer is silicon, the first layer is silicon oxide and the second layer is silicon (column 4, lines 1-5).

***Allowable Subject Matter***

2. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
3. Claims 1-6 and 15 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Prior art does not disclose:

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- A second latching movable shuttle that is formed within the first shuttle, where the second shuttle is moved in a second direction relative to the first shuttle in response to a thermally activated force to change the operating state of the device from an intermediate state to a second switch state.
- A first circular window on the first shuttle switch that is horizontally displaced and vertically aligned from a second circular window on the wafer, and here the windows become aligned after the acceleration event to enable an optical signal to pass through both the windows.
- A method of operation of the MEMS device wherein the first movable shuttle is latched after moving in a first direction in response to an acceleration event, and the second movable shuttle, formed within the first movable shuttle is latched by movement in a second direction in response to a thermally activated force.

Prior art that meets some of the limitations of the allowed claims are: Robinson (US 6,568,329 B1), Robinson (US 6,568,329 B1), Robinson (US 6,321,654 B1), and Cunningham (US 6,882,264 B2).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Biju Chandran whose telephone number is (571) 272-5953. The examiner can normally be reached on 8AM - 5PM. Mon-Fri.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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LYNN FEILD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800